

WHAT IS CLAIMED IS:

1. A cap device for a bottle having an externally threaded mouth and a neck with a tapered inner surface, said cap device comprising:
 - 5 a cap body twistably attaching to said externally threaded mouth of said bottle;
 - a funnel part integrated with said cap body, said funnel part having an opening at a lower end thereof;
 - a cap cover assembled with the cap body to define a cavity for containing an additive in said cavity;
 - 10 a valve member for closing and opening said opening at said lower end of said funnel part, said valve member having a valve part at a center thereof and a shank extending upward from said valve part, said shank extending into said cap body through said opening at said lower end of said funnel part;
 - wherein said valve member is removeably seated within said neck of said bottle and
 - 15 sealing said opening of said lower end of said funnel part when said cap body is completely twisted onto said bottle; and,
 - wherein said valve member is disengaged from within said neck of said bottle and not sealing said opening of said lower end of said funnel part when said cap body is twisted off said bottle.
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2. The cap device as described in claim 1 wherein said shank extending from said valve part has a wedge-shaped tip.
3. The cap device as described in claim 2 wherein said valve member has a plurality of
- 25 radial ribs extending outward from an external surface of the valve part while defining a plurality

of additive discharging holes between the radial ribs;

said valve member also having a ring to surround outside ends of the radial ribs; and,

said ring having an outer surface which is tapered to correspond to the tapered inner surface of the neck of the bottle.

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4. The cap device as described in claim 1 further comprising a vent hole formed at a predetermined position of an upper end of the funnel part of the cap body.

5. The cap device as described in claim 4 further comprising a vent tube extending from said
10 cavity and into said vent hole.

6. The cap device for bottles according to claim 1, further comprising:
a protective cover to receive the cap cover therein while holding the cap cover by means of
upper locking means, and removably fitted over an upper part of the bottle by means of lower
15 locking means.

7. The cap device for bottles according to claim 6, wherein the upper locking means
comprises a locking flange formed along an outer edge of a top wall of the cap cover and a locking
groove formed around a corner of a depression provided at a lower surface of a top wall of the
20 protective cover, such that the locking flange of the cap cover removably engages with the locking
groove of the protective cover; and,

wherein the lower locking means comprises a locking flange formed around an inner
surface of a lower edge of the protective cover and a locking groove formed around the upper part
of the bottle, such that the locking flange of the protective cover is removably fitted over the
25 locking groove of the bottle.

8. The cap device for bottles according to claim 1, wherein the bottle comprises:
- a first container part externally formed at a bottom of the bottle, and having an open lower end, with external threads formed at the lower end of the first container part;
 - a first chemical contained in the first container part;
 - 5 a breakable sheet provided at the open lower end of the first container part to close the lower end of the container part;
 - a second container part having an open upper end, and externally engaging with the external threads of the first container part, the second container part containing therein a second chemical which produces a cooling mixture to absorb heat from surroundings to cool the
 - 10 surroundings when the second chemical is mixed with the first chemical;
 - a breaking edge provided at an inner surface of the second container part so as to break the breakable sheet and to open the lower end of the first container part, when the second container part is rotated to move upward relative to the first container part; and
 - a skirt extending downward from a sidewall of a lower portion of the bottle so as surround
 - 15 the first and second container parts.
9. A bottle having a cap device for separate storage of an additive therein and for release of said additive into said bottle as said cap device is being removed from said bottle, said bottle having a neck and an externally threaded mouth;
- 20 said cap device comprising:
- a cap body twistably attaching to said externally threaded mouth of said bottle;
 - a funnel part integrated with said cap body, said funnel part having an opening at a lower end thereof;
 - a cap cover assembled with the cap body to define a cavity for containing an
 - 25 additive in said cavity;

a valve member for closing and opening said opening at said lower end of said funnel part, said valve member having a valve part at a center thereof and a shank extending upward from said valve part, said shank extending into said cap body through said opening at said lower end of said funnel part;

5 wherein said valve member is removeably seated within said neck of said bottle and sealing said opening of said lower end of said funnel part when said cap body is completely twisted onto said bottle; and,

 wherein said valve member is disengaged from within said neck of said bottle and not sealing said opening of said lower end of said funnel part when said cap body is
10 twisted off said bottle.

10. The bottle as described in claim 9 wherein said inner surface of said neck is tapered.

11. The bottle as described in claim 10 wherein said shank extending from said valve part has a wedge-shaped tip.

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12. The bottle as described in claim 11 wherein said valve member has a plurality of radial ribs extending outward from an external surface of the valve part while defining a plurality of additive discharging holes between the radial ribs;

 said valve member also having a ring to surround outside ends of the radial ribs; and,

20 said ring having an outer surface which is tapered to correspond to the tapered inner surface of the neck of the bottle.

13. The bottle as described in claim 10 further comprising a vent hole formed at a predetermined position of an upper end of the funnel part of the cap body.

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14. The bottle as described in claim 13 further comprising a vent tube extending from said cavity and into said vent hole.

15. The bottle according to claim 9, further comprising:

5 a protective cover to receive the cap cover therein while holding the cap cover by means of upper locking means, and removably fitted over an upper part of the bottle by means of lower locking means.

16. The bottle according to claim 15, wherein the upper locking means comprises a locking
10 flange formed along an outer edge of a top wall of the cap cover and a locking groove formed around a corner of a depression provided at a lower surface of a top wall of the protective cover, such that the locking flange of the cap cover removably engages with the locking groove of the protective cover; and,

wherein the lower locking means comprises a locking flange formed around an inner
15 surface of a lower edge of the protective cover and a locking groove formed around the upper part of the bottle, such that the locking flange of the protective cover is removably fitted over the locking groove of the bottle.

17. The bottle according to claim 9, wherein the bottle comprises:

20 a first container part externally formed at a bottom of the bottle, and having an open lower end, with external threads formed at the lower end of the first container part;

a first chemical contained in the first container part;

a breakable sheet provided at the open lower end of the first container part to close the lower end of the container part;

25 a second container part having an open upper end, and externally engaging with the

external threads of the first container part, the second container part containing therein a second chemical which produces a cooling mixture to absorb heat from surroundings to cool the surroundings when the second chemical is mixed with the first chemical;

5 a breaking edge provided at an inner surface of the second container part so as to break the breakable sheet and to open the lower end of the first container part, when the second container part is rotated to move upward relative to the first container part; and

a skirt extending downward from a sidewall of a lower portion of the bottle so as surround the first and second container parts.

10 18. The cap device for bottles according to claim 9, wherein a step is formed around the inner surface of the neck of the bottle to seat the valve member in the neck of the bottle.

19. The bottle as described in claim 18 wherein said valve member has a plurality of radial ribs extending outward from an external surface of the valve part while defining a plurality of
15 additive discharging holes between the radial ribs;

said shank extending from said valve part has a wedge-shaped tip; and

said valve member also having a ring to surround outside ends of the radial ribs.

20. The bottle as described in claim 18 further comprising a vent hole formed at a
20 predetermined position of an upper end of the funnel part of the cap body.